

**Environmental Assessment
Assessment of Effect
January 2002**



Reclamation of Three Abandoned Cinder Mines

Petroglyph
National Monument
New Mexico

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Petroglyph
National Monument

Summary

Prior to the establishment of Petroglyph National Monument, Albuquerque's West Mesa was used for a variety of activities, some of which greatly impacted the natural environment. One such use was mining the Volcanoes for volcanic cinders used for decoration, road surfacing and possibly for construction (making "cinder blocks"). The mining resulted in three scars on the landscape now within Petroglyph National Monument. The National Park Service and the City of Albuquerque seek to reclaim the three sites and eliminate safety concerns at two of the sites. One site has a 60-foot high wall and another site has a 15-foot high wall, which are falling hazards. The National Park Service Mining and Minerals Branch conducted an evaluation of the three sites in "Reclamation Alternatives for Three Cinder Quarries, Petroglyph National Monument, Bernalillo County, New Mexico." In the document three alternatives were proposed -- fill the voids with existing material and re-contour the landscape, fence the voids and leave them as is and bring in material to fill the voids and re-vegetate the area. The preferred alternative is to fill the voids with existing material and re-contour the landscape. The impact to the environment should be minimal and temporary as several spoil piles left after the mining would be used to fill the voids. There are no known Threatened or Endangered species in the area. The main impact would be on the landscape as the voids are filled and health and safety issues are resolved.

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the name and address below. This environmental assessment will be on public review for 30 days. Please note that names and addresses of people who comment become part of the public record. **If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment.** We will make all submissions from organizations, businesses and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

Judith Córdova, Superintendent
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United States Department of the Interior & National Park Service & Petroglyph National Monument

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PURPOSE AND NEED

PURPOSE

Petroglyph National Monument was established on Albuquerque's West Mesa on June 27, 1990 "In order to preserve, for the benefit and enjoyment of present and future generations, that area...containing the nationally significant West Mesa escarpment, the Las Imagines National Archeological District, a portion of the Atrisco Land Grant, and other significant natural and cultural resources..." The 7,200 acre Monument is jointly owned and managed by the National Park Service, the State of New Mexico and the City of Albuquerque. Monument resources include an estimated 25,000 petroglyphs, over 350 documented archeological sites and ethnographic resources important to many of the tribes of the Southwest.

This Environmental Assessment is to satisfy the requirements of the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA) for evaluating proposed federal actions. There are three abandoned mines within the monument, located along the line of volcanic vents near the western edge of the Monument. Access to the quarries is from Paseo de Volcan, approximately 12 miles west of the City of Albuquerque and north of I-40. Because the Monument is cooperatively managed by multiple agencies, Sites 1 and 2 are on lands managed by the City of Albuquerque and the National Park Service manages Site 3. The National Park Service and the City of Albuquerque seek to reclaim the three sites to mitigate safety concerns and repair a scar on the landscape.

NEED

The majority of petroglyphs are found along the escarpment, which is the erosional remnant of a series of basaltic lava flows. Desert varnish, a layer of iron and manganese oxide, coats the blocks of basalt near the escarpment, which provides the surface used by prehistoric people to carve the petroglyphs. The volcanic materials that compose the escarpment were created about 130,000 years ago by six volcanic eruptions and the resulting flows. The eruptions occurred along a north/south fissure on the western edge of the Rio Grande Rift, a significant geologic feature extending from southern Colorado through New Mexico.

To the west of the escarpment is a broad sloping surface known as the West Mesa. Five steep volcanic cones, near the western edge of the West Mesa, were formed during the last phases of the eruptions. The cones are composed of inter-layered basalt flows and cinders. The five cones, JA, Black, Vulcan, Bond and Butte are within Petroglyph National Monument. The cinder mines that resulted in Site 1 and 2 are located on the flanks of the Vulcan and Black cones respectively. Site 3 is excavated into a basalt flow south of the JA cone.

Soils within the project area form from both the slow weathering of the basaltic parent material as well as eolian (wind blown) materials known as loess (typically, fine sands and silts). Soil depth ranges from zero-thickness on exposed or steep areas, to nearly 5-feet deep on low gradient slopes in the lee of topographic highs.

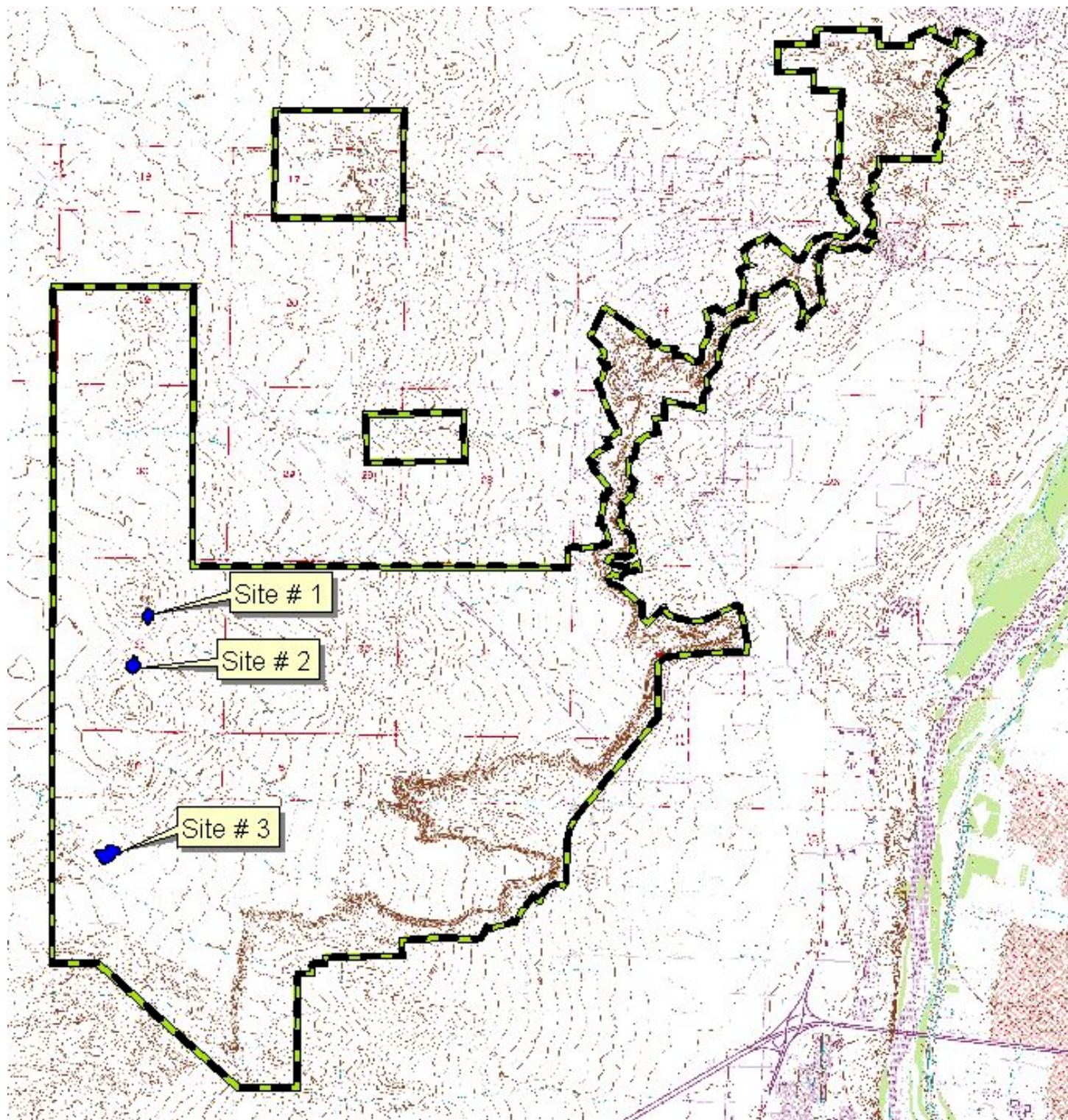


Figure 1. Map Showing Locations of the Three Mines Within Petroglyph National Monument

General Site Conditions

Production at the mines used cinder and scoria, primarily for decorative rock and road surfacing and possibly for construction material. The material of interest at Sites 1 and 2 were the cinders that were thrown out of the volcanic vent during eruption and became weakly stuck together. The material at Site 3 was derived from the basalt flow, which was crushed and perhaps washed on-site prior to shipping.

Mining at Site 1 (on the southeast slope of the Vulcan cone) and Site 2 (between the existing parking lot and Black cone) ceased at least 20 years ago, when the area came under protection as an Albuquerque Open Space preserve. Mining activity at Site 3 (south of JA cone) continued until the late 1980's (or early 1990's), just prior to the establishment of Petroglyph National Monument.

The total disturbed surface of all three sites is about 9.9 acres, not including access roads. The mines present safety concerns and is a visual impact to an area that receives high visitor use and has important cultural values to the tribes of the Southwest. The three tallest cones within Petroglyph National Monument are the highest points west of the Rio Grande in the Albuquerque area.

If the mines remain in their existing state, it would take several decades to centuries for the recovery of vegetation to mimic conditions found in the surrounding undisturbed lands. Much of the exposed volcanic material is unweathered and of a texture that results in extremely low moisture-holding capacity. Unnatural appearing topography would still be conspicuous even if the vegetation recovers and the site is erosionally stable.

Site # 1 - Vulcan Cone

This 3-acre site is excavated into the side of the Vulcan cone, which is the highest of the line of volcanic cones and a popular destination point. The site consists of the main quarry area and several overburden stockpiles around the lip of the quarry. The overburden is made of topsoil and weathered horizons that were pushed into the piles and are available for use in reclamation. The vegetation has recovered poorly within the main quarry, but has recovered fairly well on the overburden stockpiles.

A composite 60-foot high wall (a series of steep faces) at Site 1 is a safety problem for visitors hiking near the edge. Not all sections of the high wall are dangerous, at several segments only a short fall would occur. Nonetheless, the potential exists for someone to fall off and sustain serious injuries, especially when considering the abrasive nature of the cinders.

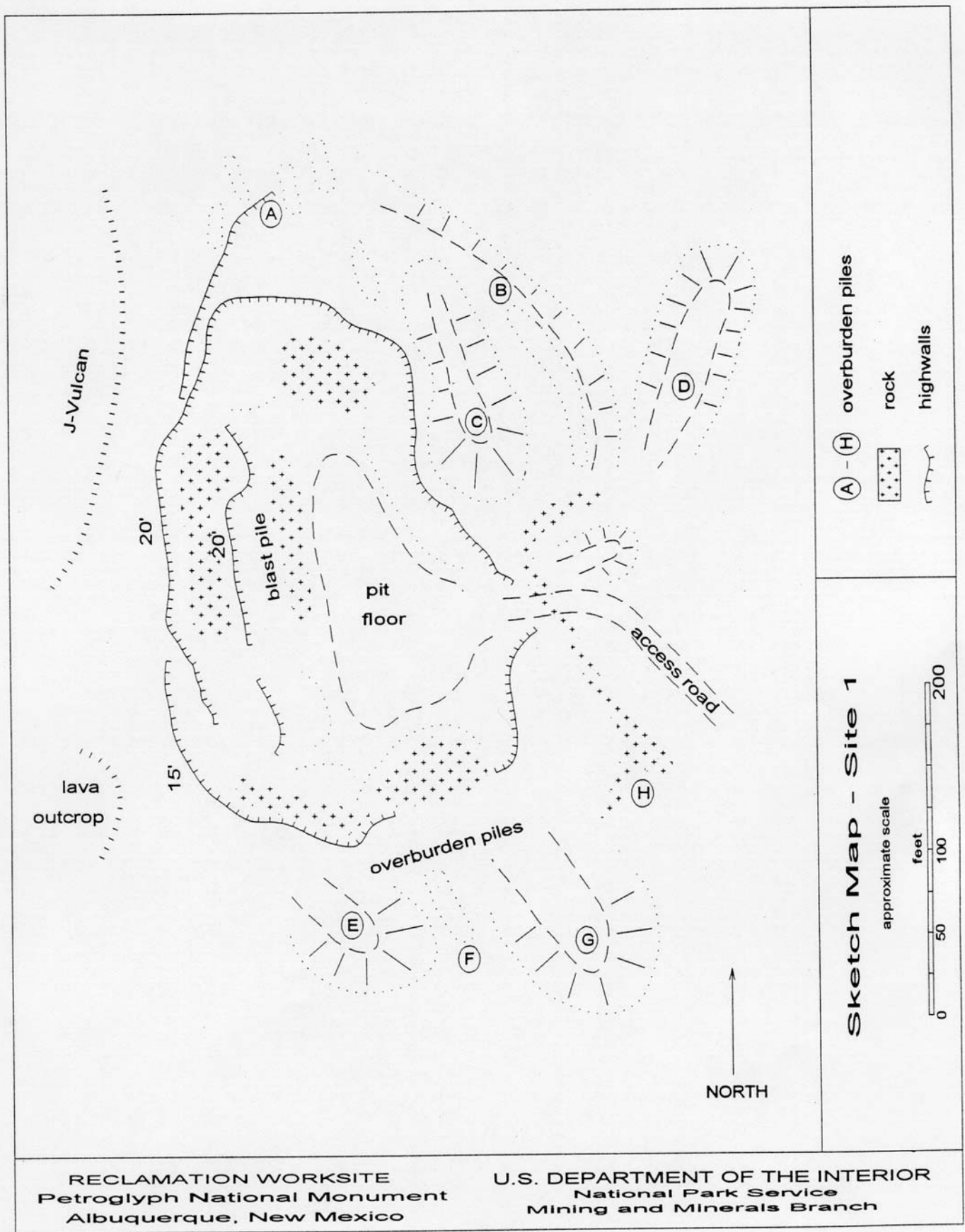


Figure 2. Sketch Map of Site # 1



Photo 1
Site # 1 Cinder Mine



Photo 2
Spoil Piles Around Site # 1



Photo 3
Spoil Piles Around Site # 1



Photo 4
Spoil Pile Around Site # 1

Site 2 - North of Black Cone

This site, about 3.4 acres in size, is located on a small volcanic vent on the northern flank of the Black cone. The disturbed area consists of two small pits where material was excavated and pushed into berms that encircle them. Apparently, this quarry was in the early stages of development; most of the excavated cinders are still on-site. Some stockpiles of overburden (topsoil and weathered horizons) exist to the southeast portion and it is possible that more surface material is buried below the stockpiles of the fresh, unweathered cinder. Vegetation recovery has, for the most part, been poor except on the overburden.

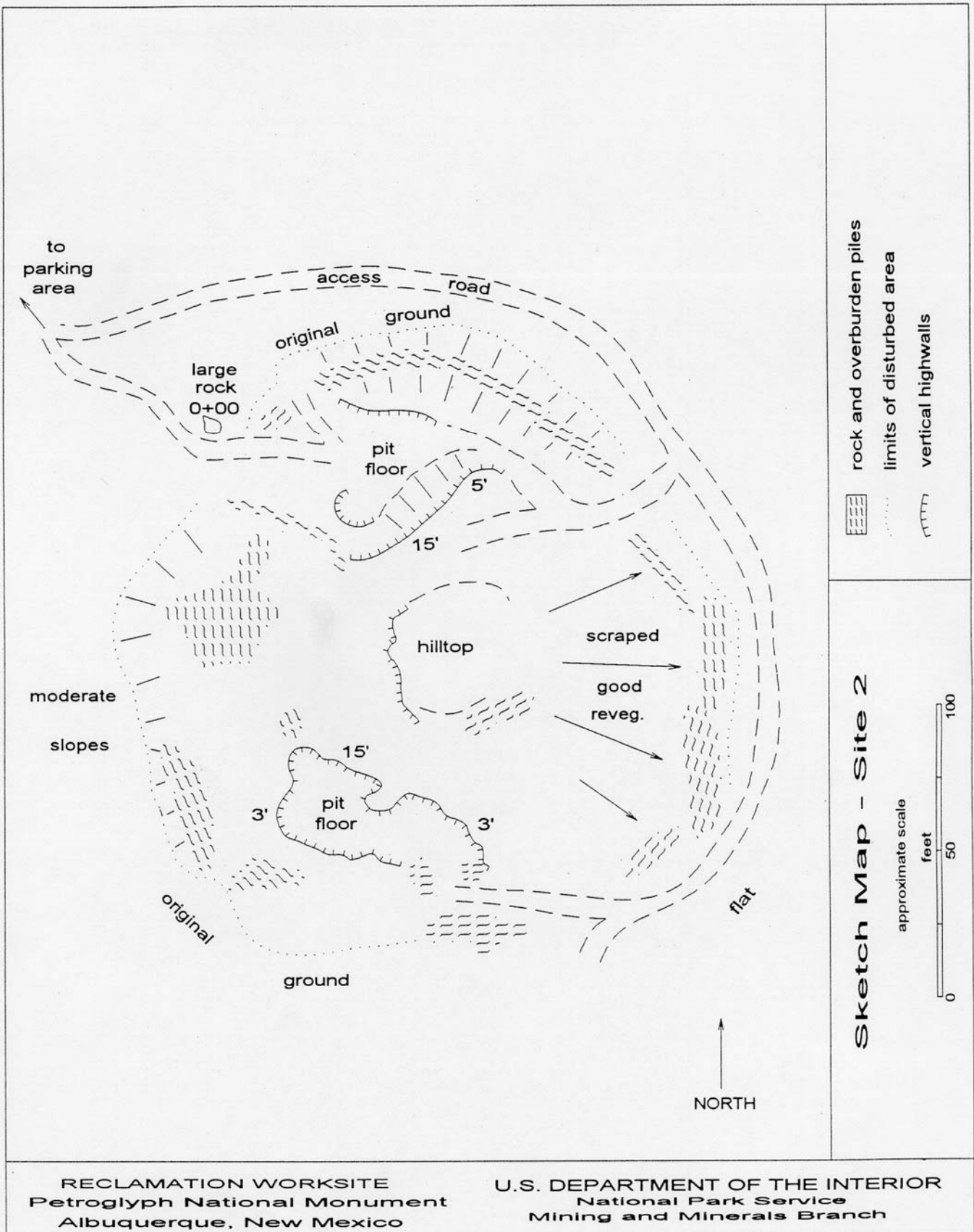


Figure 3. Sketch Map of Site # 2



Photo 5
Spoil Piles Around Site # 2



Photo 6
Spoil Piles Around Site # 2



Photo 7
Spoil Piles Around Site # 2



Photo 8
Spoil Piles Around Site # 2

Site 3 - South of JA Cone

This site consists of 3.5 acres of disturbance including a 125'x175'x15' quarry and a 175'x165' area where fine gravel and smaller fines exist, probably reject material from processing. The main quarry area was excavated into a low escarpment of vesicular basalt, near a few observed petroglyphs. The maximum 15-foot (mostly less) high wall is considered a minor safety problem because this site is remote and infrequently visited.

The veneer of fines is probably "reject," that is, the unwanted material from crushing, sorting, and perhaps washing of the vesicular basalt; this reject material is an estimated 1-foot thick. Another indication of some type of processing is the uniform-grade (basically the same size) of the basalt in the stockpiles at areas A and B. Vegetation recovery within the quarry is poor and recovery on the stockpiles is nonexistent.

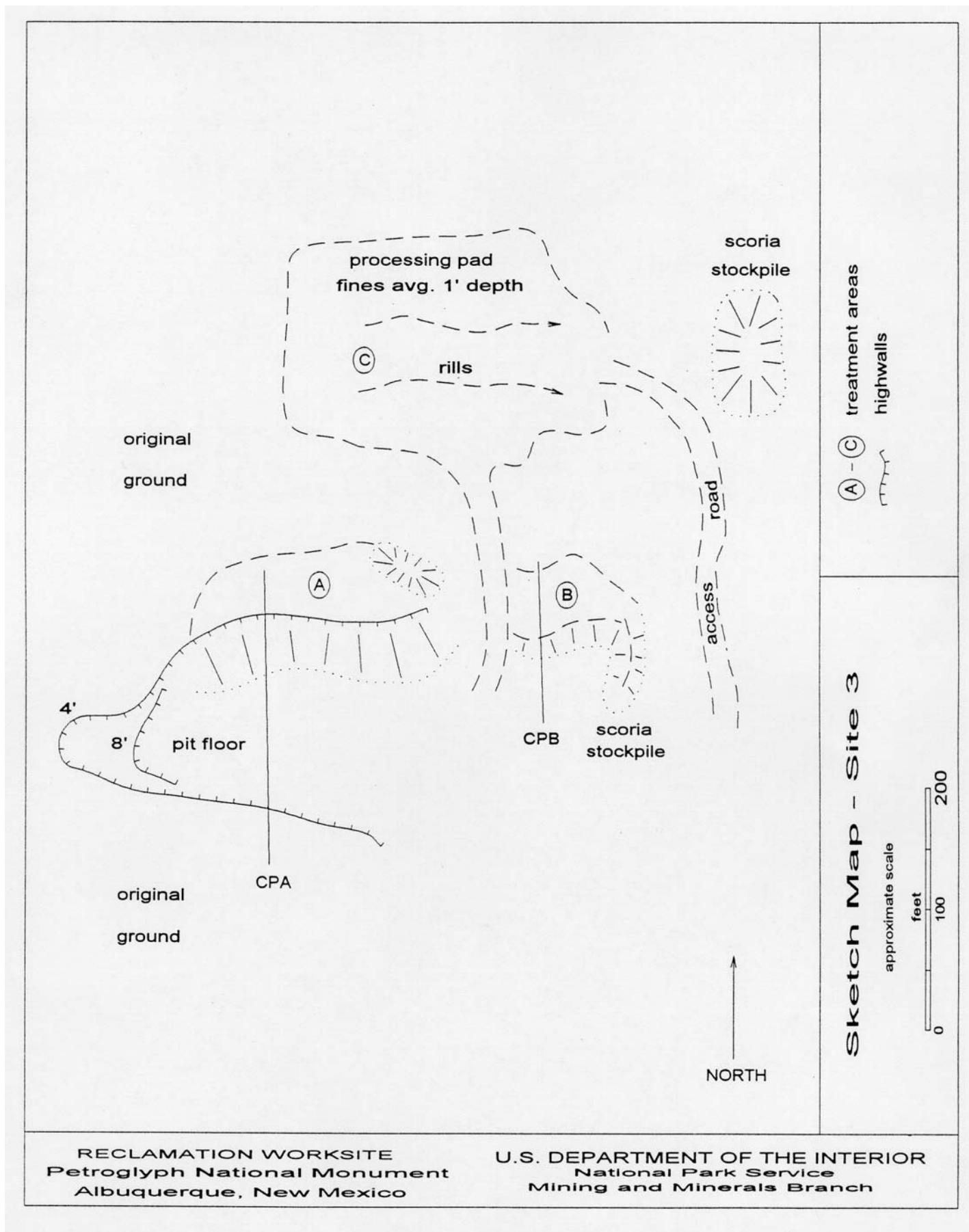


Figure 4. Sketch Map of Site # 3



Photo 9
Site # 3 Basalt Rock Mine



Photo 10
Stockpiled Material Around Site # 3



Photo 11
Flat Pad of Crusher Fines at Site # 3



Photo 12
Stockpiled Material Around Site # 3

SCOPING

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in an environmental assessment. Petroglyph National Monument conducted both internal scoping with appropriate National Park Service staff and City of Albuquerque Open Space management and external scoping with the public and interested and affected groups and agencies.

Internal scoping was conducted by the resource management staff of Petroglyph National Monument. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined what the likely issues and impact topics would be, and identified the relationship, if any, of the proposed action to other planning efforts at the monument.

A press release describing the proposed action was issued on September 12, 2001 (see Appendix 1, page 45, for text). The following American Indian tribes traditionally associated with the lands of Petroglyph National Monument were also apprised by letter of the proposed action on October 01, 2001 (see Appendix 2, page 47 for text).

Table 1. Native American Groups Notified By Letter of Proposed Action During Scoping

Jicarilla Apache Tribe	Sandia Pueblo	Taos Pueblo	Navajo Nation
Mescalero Apache Tribe	San Felipe Pueblo	Tesuque Pueblo	Navajo Nation Council
Acoma Pueblo	San Ildefonso Pueblo	Zia Pueblo	All Indian Pueblo Council
Cochiti Pueblo	San Juan Pueblo	Laguna Pueblo	Five Sandoval Indian Pueblos
Isleta Pueblo	Santa Ana Pueblo	Pojoaque Pueblo	Eight Northern Indian Pueblos
Jemez Pueblo	Santa Clara Pueblo	Picuris Pueblo	
Nambe Pueblo	Santo Domingo Pueblo	Zuni Pueblo	

Comments were solicited during external scoping until October 12, 2001. One comment was received from the Pueblo of Laguna. They requested a site visit and expressed support of the proposed action.

The undertakings described in this document are subject to Section 106 of the National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*). Consultations with the New Mexico State Historic Preservation Office (SHPO) have been ongoing since the inception of the project. On December 20, 2001 the SHPO was contacted via official correspondence further apprising them of the project and requesting comments and review of the proposed undertaking. This environmental assessment will also be submitted to the SHPO for review and comment, to fulfill Petroglyph National Monument's obligations under Section 106 (36 CFR 800.8[c], *Use of the NEPA process for section 106 purposes*).

RELATIONSHIP OF PROPOSED ACTION TO PREVIOUS PLANNING EFFORTS

The reclamation of the three cinder mines is consistent with Petroglyph National Monument's General Management Plan (1996) as well as the Resource Management Plan (1999).

IMPACT TOPICS

Specialists in the National Park Service and the City of Albuquerque Open Space Division identified issues and concerns affecting the proposed action. Impact topics are the resources of concern that could be affected by the range of alternatives. Specific impact topics were developed to ensure that alternatives were compared on the basis of the most relevant topics. The following impact topics were identified on the basis of federal laws, regulations, orders, and National Park Service *Management Policies, 2001*, and from input by the SHPO. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration.

IMPACT TOPICS ANALYED IN THIS ENVIRONMENTAL ASSESSMENT

Geologic Resources

According to the National Park Service's Management Policies, 2001, the National Park Service will preserve and protect geologic resources as integral components of park natural systems and will strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources. This includes a mandate to maintain and restore the integrity of existing geologic resources and assess the impacts of natural processes and human-related events on geologic resources. Considerable voids exist at two of the three sites that may require the transport of material to fill the voids. For this reason, impacts to geologic resources and soils will be addressed as an impact topic

Visitor Use and Experience

Petroglyph National Monument is open year round except Thanksgiving, Christmas, and New Year's days. The monument averages about 100,000 visitors per year, and peak visitation occurs from May through October. Because of the monument's easy access, convenient location, and the availability of nearby overnight accommodations, the facilities at the monument are provided for day use only. The principal visitor activities are self-guided tours of various petroglyph concentrations and visiting the Volcanoes. The average length of a visit is less than two hours. Because reclaiming the cinder mines would impact visitor use and safety, visitor use and experience will be addressed as an impact topic in this environmental assessment.

Cultural Landscapes

The National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*); the National Environmental Policy Act of 1969 (42 USC 4321 *et seq.*); and the National Park Service's Director's Order #28, *Cultural Resource Management Guideline (1997)*, *Management Policies, 2001* (2000), and Director's Order #12, *Conservation Planning, Environmental Impact Analysis, and Decision Making* (2001) require the consideration of impacts on cultural landscapes listed in or eligible to be listed in the National Register of Historic Places.

According to the National Park Service's Cultural Resource Management Guideline (DO-28), a cultural landscape is

...a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of

circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

Thus, cultural landscapes are the result of the long interaction between human beings and the land, and the influence of human beliefs and actions over time upon the natural landscape. Shaped through time by historical land-use and management practices, as well as politics and property laws, levels of technology, and economic conditions, cultural landscapes provide a living record of an area's past, and a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes; making them a good source of information about specific times and places, but at the same time rendering their long-term preservation a challenge.

The volcanoes area of Petroglyph National Monument is adjacent to several prehistoric dried up playa lakes that have significance as Paleo-Indian, Archaic and Pueblo Period landscapes. They were recently auger tested for lake sediment stratigraphy by researchers from the University of New Mexico (2001). The cultural landscape of the monument includes an assortment of features with significant associations "with a prehistoric-vernacular landscape: the majority of the petroglyphs; the naturally occurring terraces utilized for horticultural purposes; numerous rock alignments; and natural features including the escarpment and volcanoes, vegetation (grasslands), Boca Negra Cave, the Rio Puerco and Rio Grande, and surrounding landforms including mountains such as the Sandias, the Manzanos, and Mt. Taylor" (Cultural Landscape Overview, Petroglyph National Monument 1994).

In recent times, the area was mined for cinders, which resulted in the three visual scars on the landscape. The scars are not in keeping with the historic and prehistoric character of the area related to the creation of the petroglyphs for which the monument is known. Under Section 106 the impacts of this reclamation project have been determined to have no adverse effect as the results would not impact its eligibility for potential National Register listing as a cultural landscape. The results of the project would provide a long-term moderate beneficial effect, as the replacement of the cinder piles along with re-contouring of the natural landscape would restore the appearance to one more in keeping with its cultural character and prehistoric associations. Because the cultural landscape would be affected by the proposed action, cultural landscapes will be addressed as an impact topic.

ISSUE TOPICS DISMISSED FROM FURTHER CONSIDERATION

Air Quality

Section 118 of the 1963 Clean Air Act (42 U.S.C. 7401 *et seq.*) requires a park unit to meet all federal, state, and local air pollution standards. Petroglyph National Monument is designated a Class II air quality area under the Clean Air Act, as amended. A Class II designation indicates the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter as specified in Section 163 of the Clean Air Act. Further, the Clean Air Act provides that the federal land manager has an affirmative responsibility to protect air quality related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts.

Hauling and operating equipment, transporting material and other construction activities could result in temporarily increased vehicle exhaust and emissions. However, hydrocarbons, NO_x, and SO₂ emissions, as well as any airborne particulates created by fugitive dust plumes, would be rapidly dissipated by air drainage because air stagnation is rare at the project site. Overall, there could be a negligible degradation of local air quality; however, such effects would be temporary, lasting only as long as construction. Petroglyph National Monument's Class II air quality would not be unaffected by the proposal. Therefore, air quality was dismissed as an impact topic.

Water Resources (Water Quality, Wetlands, and Floodplains)

National Park Service policies require protection of water quality consistent with the Clean Water Act. Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge of dredged or fill material into U.S. waters.

Petroglyph National Monument lies in the Albuquerque basin of the upper Rio Grande drainage. Arroyos provide drainage routes to the Rio Grande. Most drainage from the Monument enters the City of Albuquerque storm drainage system soon after exiting the Monument. The Monument boundary is (at a minimum) 1.5 miles from the Rio Grande. The City of Albuquerque presently supplies the Monument's domestic water needs. The proposed action would have no effect on the Rio Grande or any of the arroyos coursing through the Monument, or the domestic water supply.

Executive Order 11990, *Protection of Wetlands*, requires federal agencies to avoid, where possible, adversely impacting wetlands. Proposed actions that have the potential to adversely impact wetlands must be addressed in a Statement of Findings. The proposed action is confined to three relatively small areas away from arroyos and drainages. No jurisdictional wetlands have been identified with the Monument. There would be no impacts to wetlands. A Statement of Findings for wetlands will not be prepared.

Executive Order 11988, *Floodplain Management*, requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. Certain construction within a 100-year floodplain requires preparation of a Statement of Findings. The proposed reclamation is outside the 100-year floodplain. A Statement of Findings for floodplains will not be prepared.

Because water quality would be unaffected by the proposed action and there would be no impacts to either wetlands or floodplains, water resources was dismissed as an impact topic.

Biotic Communities

The National Environmental Policy Act of 1969 (42 USC 4321 *et seq.*) calls for an examination of the impacts on all components of affected ecosystems. National Park Service policy is to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and ecological integrity of plants and animals (National Park Service *Management Policies*, 2001).

Heavy grazing (to bare soil in the 1940's and 1950's), off-road vehicles and other recreation and agricultural uses have disturbed most of the land surrounding and within Petroglyph National Monument. As a result, disturbance of native vegetation is widespread throughout the area and native habitats are mostly remnants. Native vegetation such as Fourwing Saltbush (*Atriplex canescens*), Sand Sage (*Artemisia filifolia*), Broom Dalea (*Psoralea scoparius*), Grama grass (*Bouteloua* spp.), and One-seed Juniper (*Juniperus monosperma*) can be found in undeveloped areas of the Monument, as well as such non-native species as Russian Thistle (*Salsola kali*). No rare or unusual plant communities occur in the monument or general vicinity.

The variety and number of wildlife observed at Petroglyph National Monument is limited due to encroaching development and lack of permanent water sources, but include incidences of coyote, rock squirrel, antelope squirrel, kangaroo rat, white-throated woodrat, and desert cottontail. Common bird species observed throughout the monument include Horned Lark, Red-tail Hawk, Scaled Quail, Mourning Dove, Rock Wren, Meadowlark, and various sparrows.

Construction related noise could potentially disturb transient wildlife but such adverse impacts would be temporary, lasting only as long as construction, and negligible. Therefore, biotic communities were dismissed as an impact topic.

Threatened, Endangered, and Candidate Species and Species of Special Concern

The Endangered Species Act (1973) requires an examination of impacts on all federally listed threatened or endangered species. National Park Service policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species. The species federally or state listed as threatened or endangered species, candidate species, and species of special concern that may be potentially found in Bernalillo County include:

Table 2. T&E Species Potentially Found in Bernalillo County, New Mexico

Common Name	Scientific Name	Status
Rio Grande Silvery Minnow	<i>Hybognathus amarus</i>	Endangered
Black-footed ferret	<i>Mustela nigripes</i>	Endangered
Whooping Crane	<i>Grus americana</i>	Endangered
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered
New Mexican Jumping Mouse	<i>Zapus hudsonius luteus</i>	Threatened
Spotted Bat	<i>Euderma maculatum</i>	Threatened
Neotropic Cormorant	<i>Phalacrocorax brasilianus</i>	Threatened
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Common Black-hawk	<i>Buteogallus anthracinus anthracinus</i>	Threatened
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	Threatened
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened
White-eared Hummingbird	<i>Hylocharis leucotis borealis</i>	Threatened
Bell's Vireo	<i>Vireo bellii</i>	Threatened
Gray Vireo	<i>Vireo vicinior</i>	Threatened
Baird's Sparrow	<i>Ammodramus bairdii</i>	Threatened
Mountain Plover	<i>Charadrius montanus</i>	Proposed Threatened
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Candidate
Ferruginous Hawk	<i>Buteo regalis</i>	Species of Concern
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Species of Concern
Slate Millipede	<i>Comanchelus chihuanus</i> (= <i>Toltecolus chihuanus</i>)	Species of Concern

Of all the species listed, only the Ferruginous Hawk, Loggerhead Shrike and Slate Millipede are known to occur within Petroglyph National Monument. The listed bird species range over large areas of the region and are potential transients in the monument, but there are no known nesting sites in the monument and monument lands are not vital for foraging and roosting. Construction related noise could potentially disturb transient bird species but such adverse impacts would be temporary, lasting only as long as construction, and negligible, because suitable habitat for transient birds is found throughout the region. To minimize the likelihood of disturbing any nesting bird species, any construction activity would take place outside of the general nesting period from March through August. The three species noted above do occur within Petroglyph National Monument, but are not known to inhabit any of the three mine sites. The Ferruginous Hawk has been observed soaring high above and at the extreme south end of the Monument where there are fewer disturbances due to human traffic. The Loggerhead Shrike has been observed in more established shrubland areas further west and north of the mine sites. The Slate Millipede has been observed along the escarpment edge a considerable distance from the mine sites. No impact to any threatened, endangered, proposed threatened or candidate species or species of concern is anticipated. Therefore, the topic of threatened, endangered, and candidate species and species of special concern was dismissed as an impact topic.

Soundscape Management

In accordance with National Park Service *Management Policies* (2001) and Director's Order #47, *Sound Preservation and Noise Management*, an important part of the National Park Service mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in parks, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and duration of human-caused sound considered acceptable varies among National Park Service units, as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas.

Hauling material, operating equipment and other construction activities could result in dissonant, human-caused sounds. However, any dissonant sounds associated with construction would be temporary, lasting only as long as the construction activity generating the sound, and would negligibly impact visitor enjoyment of the monument. The majority of the visitation to the area occurs on the weekends (outside of the periods of work). In addition, an airport adjacent to the Monument already impacts the soundscape near the project sites. Because any dissonant, construction-related sounds would have adverse but short-term and negligible impacts on visitor enjoyment of the monument, soundscape management was dismissed as an impact topic.

Lightscape Management

In accordance with National Park Service *Management Policies* (2001), the National Park Service strives to preserve natural ambient landscapes, which are natural resources and values that exist in the absence of human caused light. Petroglyph National Monument strives to limit the use of artificial outdoor lighting to that which is necessary for basic safety requirements and to ensure that all outdoor lighting is shielded to the maximum extent possible, to keep light on the intended subject and out of the night sky. The proposed action would not affect the existing exterior lighting of any facilities within the Monument. Therefore, lightscape management was dismissed as an impact topic.

Socioeconomic Environment

The proposed action would neither change local and regional land-use nor appreciably impact local businesses or other agencies. Implementation of the proposed action could provide a negligible beneficial impact to the economies of the nearby Albuquerque Metropolitan area, e.g. minimal increases in employment opportunities for the construction workforce and revenues for local businesses and government generated from construction activities and workers. Any increase, however, would be temporary and negligible, lasting only as long as construction. Therefore, socioeconomic environment was dismissed as an impact topic.

Prime and Unique Farmlands

In August 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS) as prime or unique. Prime or Unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber and oil seed; unique farmland produces specialty crops such as fruits,

vegetables and nuts. According to the NRCS Soil Survey (Hacker, 1977), none of the soils in the project area are classified as prime or unique farmlands. Therefore, prime and unique farmland was dismissed as an impact topic in this document.

Environmental Justice

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects on their programs and policies on minorities and low-income populations and communities. The proposed action would not have health or environmental effects on minorities or low income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guideline (1998). Therefore, environmental justice was dismissed as an impact topic in this document.

Archeological Resources

Archeological surveys have confirmed that a variety of archeological sites exist within Petroglyph National Monument. Approximately 350 archeological sites have been documented within the monument's boundaries. Paleo-Indian (10,000/9500 to 5500 B.C.) sites within the monument include one late Paleo-Indian scatter recorded by Rogers near the southern volcanoes as well as several single isolated projectile points. Archaic (5500B.C. to A.D. 400/600) sites include a number of lithic scatters, a possible hunting camp (Boca Negra Cave), as well as a number of isolated diagnostic Archaic period projectile points. Basketmaker III to Pueblo I/Developmental Pueblo Period (A.D. 500 to 9800) sites include the multiple component site called Boca Negra Cave, as well as a petroglyph site, and several containing diagnostic ceramics and some isolated occurrences of ceramics and lithics. Probable Pueblo II/Late Developmental Pueblo Period (A.D. 900 to 1100) and Pueblo III/Late Developmental-Coalition Period (A.D. 100-1300) are represented in the monument by some identified ceramic scatters, however these sites are unconfirmed (Results of the 1992-94 Archeological Resource Inventory, Petroglyph National Monument 1999: 18-28).

Pueblo IV/Classic Period (A.D. 1300 to 1600) may be of the greatest significance in Petroglyph National Monument. Most of the petroglyphs found in the monument have been stylistically and relatively dated to this period, although some are associated with earlier cultural sequences. "It is estimated that as many as 90%" of petroglyphs in the monument were created during the Pueblo IV Period (Results of the 1992-94 Archeological Resource Inventory, Petroglyph National Monument 1999: 29). Only a few petroglyphs have been documented in the vicinity of the proposed project area, however none are in the immediate area of concern. Most images are found along the east-facing basalt escarpment located on the extreme eastern side of the monument, while the project area is located along the western boundary of the monument.

The end of the prehistoric era is dated to the appearance of the first Spanish explorations in the Southwest. Historic Period (A.D. 1540 to 1946) sites have been identified within the monument. These sites are primarily made up of remnants from livestock pens, historic era petroglyphs (primarily Spanish Colonial style crosses probably dating to the Colonial period, A.D. 1600-1821, or later) (Results of the 1992-94 Archeological Resource Inventory, Petroglyph National Monument 1999: 32).

Over 95% of the land within Petroglyph National Monument was intensively surveyed during the 1992 -- 1994 archeological resource inventory, including the area surrounding the volcanoes and the project area. No prehistoric or historic resources have been identified in or in close proximity to the proposed project area. Provisions would be put in place to deal with any previously unknown archeological resources. A Resource Management staff member will be on site during the primary ground disturbing activities and should any new archeological resources be discovered the work would cease and the appropriate steps taken in accordance with Section 106 and 110 of the National Historical Preservation Act as amended 1999 (16 USC 470 *et seq.*). If significant archeological resources could not be avoided, the data they possess regarding prehistoric and/or historic lifeways would be documented and recovered, in consultation with the New Mexico State Historic Preservation Office and any affiliated tribal entities. The impacts to such archeological resources would be adverse and range in intensity from minor to major, depending upon the scope of the potential actions and the location, as well as the significance of any affected resources. The proposed project area has been intensively surveyed for prehistoric and historic archeological resources and none have been found in the immediate area.

The project area has been heavily disturbed in the past by unregulated recreational use, cattle grazing, and cinder material extraction. Monument staff completed a 100% survey of the proposed project area and found no archeological resources. Any sites that may have existed at the project site were completely destroyed by the cinder removal operations of the 1980s and before. The proposed reclamation project entails utilizing existing roads and trails and would only disturb ground in areas of previous disturbance. The area was also previously surveyed by Rodgers in 1983 and is discussed in his 1983 report *The Volcano Park (Southern) Archaeological Project*, Bernalillo County, New Mexico. This report was prepared by Scientific Archeological Services to the Parks and Recreation Department, City of Albuquerque. The SHPO was contacted about the reclamation of the three abandoned cinder mines via official correspondence on December 20, 2001. The SHPO concurred with the determination of No Adverse Effect (See Appendix 3, page 50). Therefore, archeological resources were dismissed as an impact topic in this document.

Historic Structures

There would be no direct or indirect impacts to historic structures, and no change to existing conditions. No historic structures are extant in the area, nor is there any record or evidence of any structure ever existing in the proposed project area. To the north and east of the project area historic sites include corrals, pre- and post-World War II historic debris, lambing pens, and a hearth. All of these cultural entities are located well away from the proposed project area. Therefore, historic structures were dismissed as an impact topic in this document.

Museum Collections

Monument museum collections would not be impacted by the proposed project. There are no archeological resources or historic structures in the area and it is not anticipated that any collection materials would be generated by the project, with the exception of archival records associated with the project analysis itself. There are currently no exhibits or wayside displays in the project area. Therefore, museum collections were dismissed as an impact topic in this document.

Ethnographic Resources

The National Historic Preservation Act, as amended in 1992 (16 USC 470 *et seq.*); the National Environmental Policy Act of 1969 (42 USC 4321 *et seq.*); and the National Park Service's Director's Order #28, *Cultural Resource Management Guideline (1997)*, *Management Policies, 2001* (2000), and Director's Order #12, *Conservation Planning, Environmental Impact Analysis, and Decision Making* (2001) require the consideration of impacts on cultural landscapes listed in or eligible to be listed in the National Register of Historic Places.

Ethnographic resources are defined by the National Park Service as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (Director's Order #28, *Cultural Resource Management Guideline*). American Indian tribes traditionally associated with the lands of Petroglyph National Monument and others with whom monument staff regularly consult were apprised by letter of the proposed action on October 1, 2001 (see Appendix 2). One formal request was received for a site visit from Laguna Pueblo. Laguna Pueblo representatives met with monument staff on November 8, 2001 and expressed support for the proposed action. No other formal comments were received.

Native American tribes traditionally associated with the lands of Petroglyph National Monument, and others with whom monument staff regularly consult, are concerned about ground disturbance at the monument and the potential disturbance to culturally sensitive sites. The area of the proposed project is located on volcanic sites in the monument that have been identified through consultation as significant to tribes in two ways. The first is as a general area associated with spirits related to petroglyphs and the volcanoes themselves. Secondly, consultants have identified the volcanoes as significant as locations where past cultural activities and ceremonies may have taken place, including the placement of prayer sticks and other objects, and that the volcanoes have specific healing attributes. (Petroglyph National Monument Rapid Ethnographic Assessment, 1993).

Petroglyphs are found in the area, although usually not located directly on the volcanic cones themselves. The only known prehistoric and historic sites in the area are associated with temporary use areas such as a Paleo-Indian hunting camp, sheep herding corrals, isolated occurrences of worked lithic materials, and a shrine tentatively associated with the modern pueblos. None of these latter cultural entities are located within close proximity of the project area. Previous archeological survey in the area has identified no other archeological remains.

Although ground disturbance is a part of the proposed project, only existing cinder piles left over from the previous cinder extraction activities would be relocated and little digging would actually occur. The proposed action introduces no foreign material and in many ways can be perceived as an action that would serve to heal scars left by modern mining activities.

The chances of inadvertent discoveries are unlikely. In the event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during the proposed project, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed. All items would be left *in situ* and the project would

cease until appropriate tribal representatives were consulted. Copies of the environmental assessment will be forwarded to each affiliated tribe or group for review and comment. If subsequent issues of concern are identified, appropriate consultations would be undertaken.

Since it is very unlikely that ethnographic resources would be affected and there are no extant habitation sites, and because appropriate steps would be taken to protect any human remains, funerary objects, sacred objects, or objects of cultural patrimony inadvertently discovered, ethnographic resources was dismissed as an impact topic.

ALTERNATIVES CONSIDERED

ALTERNATIVE A – NO ACTION

Under the no action alternative, the cinder mines would not be reclaimed and would remain open to the public. No material would be transported or moved to allow the re-contouring of the landscape and the safety hazard would remain at two of the three sites. The area would continue to function as previously described with little or no natural recovery except for minimal amounts on spoil piles surrounding the mines and the scar on the cultural landscape would continue to exist.

ALTERNATIVE B – PREFERRED ALTERNATIVE

The preferred alternative is to backfill the sites with existing material and re-contour the landscape. A treatment for each site is provided below. This alternative would utilize existing roads and disturbance areas would be limited to the mined sites. This alternative also adequately addresses tribal concerns.

Site 1

This would involve back filling the high wall and the pit to eliminate safety concerns and blend the site into the surrounding landscape. This requires transporting approximately 4700 cubic yards of fill material from Site 2 in addition to the material in the onsite stockpiles (approximately 7800 cubic yards). This work utilizes a bulldozer, front-end loader and dump trucks. The road between Site 1 and Site 2 may need minor grading and/or watering for dust control.

Site 2

This uses the remaining material (approximately 2435 cubic yards) after transporting 4700 cubic yards to Site 1 for back filling the two small existing pits and shaping with the surrounding landscape. A bulldozer is used to perform the re-grading work; a loader and dump trucks are needed to transport material to Site 1. Any large boulders or intact scoria would be left protruding from the surface for visual interest and site diversity. All overburden and buried topsoil would be used as cover material at Site 2.

Site 3

This entails placing the stockpiled basalt and fine material into the main quarry area; this material is currently at areas A, B, and C (see Figure 4). A hydraulic excavator is used to remove the fines from area C. A competent excavator operator can remove the fines without having to work on the freshly exhumed native soil, thus minimizing the disturbance to the native soil

underlying the fines. Once the fines are removed from the native soil, a bulldozer would push the fines into a stockpile in the main quarry.

Then the stockpiled basalt in areas A and B (see Figure 4) would be moved by bulldozer to the main quarry area, mixed with the fines and placed against the high wall. Mixing the fines into the well-graded basalt would inhibit downward washing into voids left by the rock. This work would minimize the safety hazard, blend the site with the surrounding landscape and provide a growing medium of 40% fines and 60% rock.

MITIGATION MEASURES OF THE PREFERRED ALTERNATIVE

To minimize construction-related impacts upon visitors, construction would occur during the week when visitation to the area is the lowest. A construction zone for staging and work area would be identified and fenced with construction tape or some similar material prior to any construction activity. The fencing would define the zone and confine activity to the minimum area required for construction activities. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the zone as defined by the fencing. In addition, the National Park Service would ensure that all contractors and subcontractors are informed that damage to resources outside the scope of work is subject to prosecution, fine, restitution costs, and other penalties.

Freshly disturbed soil horizons would be susceptible to some erosion but standard erosion control measures, such as silt fences, sand bags, or straw bales would be used, as necessary, to minimize any potential soil erosion. To avoid introduction of exotic plant species, no hay bales would be used to control soil erosion. Hay often contains seed of undesirable or harmful alien plant species. Therefore, on a case-by-case basis the following materials may be used for any erosion control dams that may be necessary: rice straw, straws determined by the National Park Service to be weed-free (e.g., Coors barley straw or Arizona winter wheat straw), cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales.

If during construction previously undiscovered archeological resources are discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed, if necessary, in consultation with the New Mexico State Historic Preservation Office. In the extremely unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed.

The National Park Service adopted the concept of sustainable design as a guiding principle of facility planning and development. The objectives of sustainability are to design National Park Service facilities to:

- minimize adverse effects on natural and cultural values,
- reflect their environmental setting,
- maintain and encourage biodiversity,
- construct and retrofit facilities using energy-efficient materials and building techniques,

- operate and maintain facilities to promote their sustainability, and
- to illustrate and promote conservation principles and practices through the sustainable design and ecologically sensitive use.

ALTERNATIVE C – FENCING AND CLOSING THE MINE SITES

Installation of fences at Site 1 and Site 3 would prohibit visitors from wandering off the edge of either high wall. The fencing (regardless of construction) would require periodic maintenance. Posting signs around the sites advising visitors the sites were closed due to safety hazards and to allow for natural processes to continue without the added impact of human traffic.

Site 1

This would involve building a fence around the mine site to mitigate safety concerns. No heavy equipment is needed to complete the fencing and minimal surface disturbance occurs. The scar on the landscape remains and visitor use is restricted. An additional visual intrusion is also added to the landscape in the form of a fence. The view to and from the volcanoes is listed as one of the important visual qualities of the Monument.

Site 2

This site would remain unchanged. There are no safety hazards associated with Site 2. The visual intrusion of the scar would remain. The site would continue to try and recover on its own.

Site 3

This would involve building a fence around the mine site to mitigate safety concerns. No heavy equipment is needed to complete the fencing and minimal surface disturbance occurs. The scar on the landscape remains and visitor use is restricted. An additional visual intrusion is also added to the landscape in the form of a fence.

ALTERNATIVE D – IMPORTATION OF FILL MATERIAL

This alternative relies on the importation of fill material (approximately 4700 cubic yards) for back filling Site 1. All of the available material would remain at Site 2 (approximately 7135 cubic yards) and be used for re-grading and re-contouring. The proposal for Site 3 would remain the same, relocating fines and mixing with onsite material and filling the main quarry.

Site 1

This would involve back filling the high wall and the pit to eliminate safety concerns and blend the site into the surrounding landscape. This requires importing approximately 4700 cubic yards of fill material from an outside source in addition to utilizing the material in the onsite stockpiles (approximately 7800 cubic yards). This work utilizes a bulldozer, front-end loader and dump trucks.

Site 2

This uses all of the onsite material (approximately 7835 cubic yards) for back filling the two small existing pits and shaping with the surrounding landscape. A bulldozer is used to perform the re-grading work. Any large boulders or intact scoria would be left protruding from the surface for visual interest and site diversity. All overburden and buried topsoil would be used as cover material at Site 2.

Site 3

This entails placing the stockpiled basalt and fine material into the main quarry area; this material is currently at areas A, B, and C. A hydraulic excavator is used to remove the fines from area C. A competent excavator operator can remove the fines without having to work on the freshly exhumed native soil, thus minimizing the disturbance to the native soil underlying the fines. Once the fines are removed from the native soil, a bulldozer would push the fines into a stockpile in the main quarry.

Then the stockpiled basalt in areas A and B would be moved by bulldozer to the main quarry area, mixed with the fines and placed against the high wall. Mixing the fines into the well-graded basalt would inhibit downward washing into voids left by the rock. This work would minimize the safety hazard, blend the site with the surrounding landscape and provide a growing medium of 40% fines and 60% rock.

The importation of material from outside of the Monument presents two problems: possible importation of non-native/invasive species and importation of contaminated material. Without extensive sampling and testing, there is no way to know if material brought into Site 1 contains non-native seeds or contaminants. In addition, affiliated tribes did not want to have material imported to any of the sites. They felt it would degrade the significance of the area. This alternative was rejected because of the concerns of the tribes and the uncertainty of non-native species and contaminants.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that “[t]he environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101...:”

- fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- assure for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities; and enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative B, the preferred alternative, is the environmentally preferred alternative. Because implementation of the preferred alternative would return the landscape to a more natural and

functional state and eliminate the safety concerns associated with the high walls at two of the sites, Alternative B more fully promotes "...safe, healthful, productive, and esthetically and culturally pleasing surroundings..." By utilizing only existing material for the backfilling and re-contouring, Alternative B also integrates resource protection with opportunities for an appropriate range of visitor uses, which "preserve(s) important historic, cultural and natural aspects of our national heritage..." while providing "...an environment that supports diversity and variety of individual choice."

Table 3. Comparative Summary of Alternatives and Extent to Which Each Alternative Meets the Project Objectives

Alternative A (No Action Alternative)	Alternative B (Preferred Alternative)	Alternative C (Fencing/Closing Mine Sites)	Alternative D (Importation of Fill)
<p>Under the no action alternative, the cinder mines would not be reclaimed and would remain open to the public. No material would be transported or moved to allow the re-contouring of the landscape and the safety hazard would remain at two of the three sites. The area would continue to function with little or no natural recovery except for minimal amounts on spoil piles surrounding the mines. The scar on the cultural landscape would continue to exist.</p>	<p>The preferred alternative is to backfill the sites with existing material and re-contour the landscape. Excess material from Site # 2 would be transported to Site # 1 to backfill the void. Existing material at Site # 3 would be used for backfilling. Each site would be re-contoured to match the existing landscape. This alternative would utilize existing roads and disturbance areas would be limited to the mined sites. This alternative also adequately addresses tribal concerns.</p>	<p>Installation of fences at Site 1 and Site 3 would prohibit visitors from wandering off the edge of either high wall. The fencing (regardless of construction) would require periodic maintenance. Posting signs around the sites advising visitors the sites were closed due to safety hazards and to allow for natural processes to continue without the added impact of human traffic.</p>	<p>This alternative relies on the importation of fill material (approximately 4700 cubic yards) for back filling Site 1. There is a potential to import material that may have an adverse impact on the landscape. The tribes were concerned about the importation of fill material as they felt it would be detrimental to an area with important cultural significance. All of the available material would remain at Site 2 (approximately 7135 cubic yards) and be used for re-grading and re-contouring. The proposal for Site 3 would remain the same, relocating fines and mixing with onsite material and filling the main quarry.</p>
<p>Meets Project Objectives? No. The cinder mines would continue to be a scar on the landscape and the safety hazard would not be eliminated.</p>	<p>Meets Project Objectives? Yes. The scars on the landscape would be returned to a more natural and functional state and the safety hazard would be eliminated. This adequately addresses tribal concerns.</p>	<p>Meets Project Objectives? No. The cinder mines would continue to be a scar on the landscape and the safety hazard would not be eliminated.</p>	<p>Meets Project Objectives? No. The scars on the landscape would be reclaimed and the safety hazard eliminated, however it does not address tribal concerns and there is a potential for importing material that could have adverse impacts.</p>

Table 4. Comparative Summary of Environmental Impacts for Alternatives Considered

Impact Topic	Alternative A (No Action Alternative)	Alternative B (Preferred Alternative)
Geologic Resources	Impacts to geologic resources would be adverse, moderate in intensity and long-term. The scar on the landscape would not be reclaimed and the cinder mines would continue to be solely under the influence of natural processes for recovery.	The impacts would be beneficial, moderate in intensity and long term. There would be impacts to soils and geologic resources, as there would be construction to alter the existing conditions. The soils and geologic resources would be returned to a more natural and functional state. This action would repair the landscape and return it to a condition more consistent with the surrounding landscape.
Visitor Use and Experience	Impacts to visitor use and experience would be adverse, moderate in intensity and long-term. The safety hazard of the high walls and the visual impacts of the scarred landscape would remain. The mines would not blend with the surrounding landscape.	There would be impacts to visitor use and experience, as three sizeable visual scars and two safety hazards would be eliminated. The elimination of the high walls and the re-contoured landscape would enhance the visitor experience by making their visit safer and their views of the landscape aesthetically pleasing and more consistent with the surrounding landforms. The impacts would be long-term, beneficial and of moderate intensity.
Cultural Landscape	There would be no direct or indirect impacts to cultural landscapes, and no change to existing conditions.	Reclamation of the cinder mine sites by backfilling the sites with existing material and re-contour the landscape would not alter the significance of the cultural landscape. The proposed treatment for each site is similar and in each case would help restore the historic and prehistoric character to approximate its appearance prior to the institution of mining operations. The existing contours in the area would guide the restoration of the landscape. This alternative would utilize existing roads and disturbance areas would be limited to the mined sites. This alternative also adequately addresses tribal concerns

Table 4 (continued). Comparative Summary of Environmental Impacts for Alternatives Considered

Impact Topics	Alternative C (Fencing)	Alternative D (Importation of Fill)
Geologic Resources	Impacts to geologic resources would be adverse, moderate in intensity and long-term. The scar on the landscape would not be reclaimed and the cinder mines would continue to be solely under the influence of natural processes for recovery. In addition another visual impact would be added to the landscape in the form of a fence.	There would be impacts to soils and geologic resources, as there would be construction to alter the existing conditions. The soils and geologic resources would be returned to a more natural and functional state. The impacts would be long-term, beneficial and moderate in intensity. This action would repair the landscape and return it to a condition more consistent with the surrounding landscape. There is a potential to import material that could adversely impact (such as contamination) the geologic resources or existing soils.
Visitor Use and Experience	Impacts to visitor use and experience would be adverse, moderate in intensity and long-term. The safety hazard of the high walls and the visual impacts of the scarred landscape would remain. The mines would not blend with the surrounding landscape and a visual intrusion would be added to the area.	There would be impacts to visitor use and experience, as three sizeable visual scars and two safety hazards would be eliminated. The elimination of the high walls and the re-contoured landscape would enhance the visitor experience by making their visit safer and their views of the landscape aesthetically pleasing and more consistent with the surrounding landforms. The impacts would be long-term, beneficial and of moderate intensity.
Cultural Landscape	There would be a direct adverse impact to the cultural landscape by the introduction of a visual intrusion represented by the proposed fencing under Alternative C. The volcanoes area and the project area in question are highly visible from a variety of locations for a distance of several miles.	The importation of fill material for backfilling, re-grading, and re-contouring the sites would enable the best chance of recapturing the fullest restoration of the historic and prehistoric cultural landscape from a visual standpoint. However, introduction of fill material foreign to the volcanoes area was deemed inappropriate by tribal consultants. The introduction of soils and materials from another location was interpreted as a something that would detract from the spiritual significance of the site.

ENVIRONMENTAL CONSEQUENCES

METHODOLOGY FOR ASSESSING IMPACTS

Potential impacts are described in terms of type (are the effects beneficial or adverse?), context (are the effects site-specific, local, or even regional?), duration (are the effects short-term, lasting less than one year, or long-term, lasting more than one year?), and intensity (are the effects negligible, minor, moderate, or major, or would the effects constitute impairment of the monument's resources and values?).

In addition, National Park Service's *Management Policies, 2001* (2000) require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination on impairment is made in the *Environmental Consequences* section for

For purposes of analyzing potential impacts in this environmental assessment, the thresholds of change for the intensity of an impact are defined as follows:

- | | |
|--------------------|---|
| Negligible: | the impact is at the lowest levels of detection – barely perceptible and not measurable. |
| Minor: | the impact is slight, but detectable. The impact does not affect the character defining features of a National Register of Historic Places eligible or listed cultural landscape. |

- Moderate:** the impact is readily apparent. For a National Register eligible or listed cultural landscape, the impact changes a character defining feature(s) of the landscape, but does not diminish the integrity of the resource to the extent that its National Register eligibility is jeopardized.
- Major:** the impact is severe or of exceptional benefit. For a National Register eligible or listed cultural landscape, the impact changes a character defining feature(s) of the landscape, diminishing the integrity of the resource to the extent that it is no longer eligible to be listed in the National Register.
- Impairment:** a major, adverse impact to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Petroglyph National Monument; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents.

Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 USC 4321 *et seq.*), require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all four alternatives.

Cumulative impacts were determined by combining the impacts of the alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at Petroglyph National Monument and, if applicable, the surrounding region. The only reasonably foreseeable future action is the development of a trail management plan for the Monument. This plan could recommend roads and trails for closure and reclamation.

Impacts to Cultural Resources and Section 106 of the National Historic Preservation Act

In this environmental assessment, impacts to historic structures are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the National Environmental Policy Act (NEPA). These impact analyses are intended, however, to comply with the requirements of both NEPA and Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the NHPA (36 CFR Part 800, *Protection of Historic Properties*), impacts to archeological resources and the cultural landscape were identified and evaluated by (1) determining the area of

potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize or mitigate adverse effects.

Under the Advisory Council's regulations a determination of either *adverse effect* or *no adverse effect* must also be made for affected, National Register eligible cultural resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualify it for inclusion in the National Register, e.g. diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would occur later in time, be farther removed in distance or be cumulative (36 CFR Part 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means there is an effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

CEQ regulations and the National Park Service's *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g. reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis sections for archeological resources and the cultural landscape under the preferred alternative. The Section 106 Summary is intended to meet the requirements of Section 106 and is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

ENVIRONMENTAL CONSEQUENCES – ALTERNATIVE A (NO ACTION)

Geologic Resources

Impacts to geologic resources would be adverse, moderate in intensity and long-term. The scar on the landscape would not be reclaimed and the cinder mines would continue to be solely under the influence of natural processes for recovery.

Cumulative Impacts

The geologic resources have been heavily impacted by the mining activities. They would continue to be influenced only by natural processes and continue to make little or no recovery. The mine sites would remain open scars on the existing landscape. Reasonably foreseeable future actions at the Monument include creation of a trail management plan where some or all of the existing dirt roads would be targeted for removal and reclamation. Cumulatively, impacts to geologic resources resulting from past development in conjunction with impacts associated with reasonably foreseeable future actions have the potential to be adverse, and would range in intensity from

minor to moderate. Even though there is no ground disturbance associated with the no action alternative, the no action alternative would contribute adversely to the impacts of other past, present, and reasonably foreseeable future actions on geologic resources.

Conclusion

Impacts to the geologic resources would be adverse, moderate in intensity and long term.

Visitor Use and Experience

Impacts to visitor use and experience would be adverse, moderate in intensity and long-term. The safety hazard of the high walls and the visual impacts of the scarred landscape would remain. The mines would not blend with the surrounding landscape.

Cumulative Impacts

The safety concerns associated with the cinder mines would not be eliminated. Visitors would be able to access the areas surrounding the mine sites freely. Reasonably foreseeable future actions at the Monument include creation of a trail management plan where some or all of the existing dirt roads would be targeted for removal and reclamation. The impacts to the visitor experience could be adverse and the intensity could range from minor to moderate depending upon the scope of the potential actions and the location. Even though there is no ground disturbance associated with the no action alternative, the no action alternative would contribute adversely to the impacts of other past, present, and reasonably foreseeable future actions on visitor use and experience.

Conclusion

Impacts to visitor use and experience would be adverse, moderate in intensity and long term.

Cultural Landscapes

Impacts to visitor use and experience would be adverse, moderate in intensity and long-term. The scars on the landscape would remain. The mine sites would not blend with the surrounding cultural landscape.

Cumulative Impacts

Cultural resources at Petroglyph National Monument are subject to damage from vandalism, visitor access, and natural process. Previous disturbance of the area exists due to unregulated recreational use by off-highway-vehicles, cattle grazing and the cinder mining operations prior to the establishment of the Monument. A number of two-track roads and social trails are still in use by the visiting public. As it now stands, the area encompassing the project area has been determined eligible for listing on the National Register of Historic Places as part of the cultural landscape made up by Petroglyph National Monument. Even though there is no ground disturbance associated with the no action alternative, the no action alternative would contribute adversely to the impacts of other past, present, and reasonably foreseeable future actions on cultural landscapes.

Conclusion

Impacts to visitor use and experience would be adverse, moderate in intensity and long term.

ENVIRONMENTAL CONSEQUENCES – ALTERNATIVE B (PREFERRED ALTERNATIVE)

Geologic Resources

There would be impacts to soils and geologic resources, as there would be construction to alter the existing conditions. The soils and geologic resources would be returned to a more natural and functional state. The impacts would be long-term, beneficial and moderate in intensity. This action would repair the landscape and return it to a condition more consistent with the surrounding landscape.

Cumulative Impacts

The soils and geologic resources would be returned to a more natural and functional state. The mine sites would be back filled and re-contoured to the existing landscape. This would result in the elimination of scars on the landscape and allows natural processes to function again. Reasonably foreseeable future actions at the Monument include creation of a trail management plan where some or all of the existing dirt roads would be targeted for removal and reclamation. The impacts to such geological and soil resources would be beneficial and the intensity would range from minor to moderate depending upon the scope of the potential actions and the location. Even though there is ground disturbance associated with the preferred alternative, the preferred alternative would beneficially contribute to the impacts of other past, present, and reasonably foreseeable future actions on geologic resources.

Conclusion

There would moderate, long term beneficial impacts to the geologic resources.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Petroglyph National Monument; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

Visitor Use and Experience

There would be impacts to visitor use and experience, as three sizeable visual scars and two safety hazards would be eliminated. The elimination of the high walls and the re-contoured landscape would enhance the visitor experience by making their visit safer and their views of the landscape aesthetically pleasing and more consistent with the surrounding landforms. The impacts would be long-term, beneficial and of moderate intensity.

Cumulative Impacts

Visitors would be able to enjoy an aesthetically pleasing and safe visit to the volcanoes as the high walls would be eliminated as well as the scars on landscape returned to a more consistent appearance with the surrounding landscape. Reasonably foreseeable future actions at the Monument include creation of a trail management plan where some or all of the existing dirt roads would be targeted for removal and reclamation. The impacts to the visitor experience could be adverse and the intensity could range from minor to moderate depending upon the scope of the potential actions and the location. The actions associated with this alternative would beneficially

contribute to the impacts of other past, present and reasonably foreseeable future actions on visitor use and experience.

Conclusion

The impacts to visitor use and experience are beneficial in nature and would be moderate. Cumulatively, impacts to visitor use and experience resulting from past development in conjunction with impacts associated with reasonably foreseeable future actions have the potential to be adverse, and could range in intensity from minor to moderate. Because the impacts would be beneficial in nature, any contribution to future impacts would be a beneficial impact.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Petroglyph National Monument; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

Cultural Landscapes

Reclamation of the cinder mine sites by backfilling the sites with existing material and re-contour the landscape would not alter the significance of the cultural landscape. The proposed treatment for each site is similar and in each case would help restore the historic and prehistoric character to approximate its appearance prior to the institution of mining operations. The existing contours in the area would guide the restoration of the landscape. This alternative would utilize existing roads and disturbance areas would be limited to the mined sites. This alternative also adequately addresses tribal concerns.

Cumulative Impacts

The cumulative impacts would be identical for all three sites slated for reclamation activities. Tribal concerns addressed during consultation indicated a desire to have no introduction of foreign soils or materials. It was felt that to introduce other soils or cinders from another location would detract from the cultural importance of the area and would be an adverse intrusion. The moderate long-term beneficial impact of the reclamation project would significantly offset the overall adverse cumulative impacts of the previous cinder extraction activities at the mine sites.

Conclusion

The project would provide a long-term moderate beneficial effect as the replacement of the cinder piles along with re-contouring of the natural landscape would restore the appearance to one more in keeping with its cultural character and prehistoric associations.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Petroglyph National Monument; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

ENVIRONMENTAL CONSEQUENCES – ALTERNATIVE C (FENCING AND CLOSING THE MINE SITES)

Geologic Resources

Impacts to geologic resources would be adverse, moderate in intensity and long-term. The scar on the landscape would not be reclaimed and the cinder mines would continue to be solely under the influence of natural processes for recovery. In addition another visual impact would be added to the landscape in the form of a fence.

Cumulative Impacts

The geologic resources have been heavily impacted by the mining activities. They would continue to be influenced only by natural processes and continue to make little or no recovery. The mine sites would remain open scars on the existing landscape. Reasonably foreseeable future actions at the Monument include creation of a trail management plan where some or all of the existing dirt roads would be targeted for removal and reclamation. Cumulatively, impacts to geologic resources resulting from past development in conjunction with impacts associated with reasonably foreseeable future actions have the potential to be adverse, and would range in intensity from minor to moderate. Even though there is little ground disturbance associated with fencing the areas, this alternative would contribute adversely to the impacts of other past, present, and reasonably foreseeable future actions on geologic resources.

Conclusion

Impacts to the geologic resources would be adverse, moderate in intensity and long term.

Visitor Use and Experience

Impacts to visitor use and experience would be adverse, moderate in intensity and long-term. The safety hazard of the high walls and the visual impacts of the scarred landscape would remain. The mines would not blend with the surrounding landscape and a visual intrusion would be added to the area.

Cumulative Impacts

The safety concerns associated with the cinder mines would not be eliminated. Visitors' access to the areas surrounding the mine sites would be limited. Reasonably foreseeable future actions at the Monument include creation of a trail management plan where some or all of the existing dirt roads would be targeted for removal and reclamation. The impacts to the visitor experience could be adverse and the intensity could range from minor to moderate depending upon the scope of the potential actions and the location. Even though there is little ground disturbance associated with the fencing, this alternative would contribute adversely to the impacts of other past, present, and reasonably foreseeable future actions on visitor use and experience.

Conclusion

Impacts to visitor use and experience would be adverse, moderate in intensity and long term.

Cultural Landscapes

There would be a direct adverse impact to the cultural landscape by the introduction of a visual intrusion represented by the proposed fencing under Alternative C. The volcanoes area and the

project area in question are highly visible from a variety of locations for a distance of several miles.

Cumulative Impacts

The cumulative impacts would be identical for all three sites slated for reclamation activities. The fencing of the site for safety reasons would have a moderate adverse impact on the visual resources related to the cultural landscape.

Conclusion

There would be a direct adverse impact to the cultural landscape by the introduction of a visual intrusion.

ENVIRONMENTAL CONSEQUENCES – ALTERNATIVE D (IMPORTATION OF FILL MATERIAL)

Geologic Resources

There would be impacts to soils and geologic resources, as there would be construction to alter the existing conditions. The soils and geologic resources would be returned to a more natural and functional state. The impacts would be long-term, beneficial and moderate in intensity. This action would repair the landscape and return it to a condition more consistent with the surrounding landscape. There is a potential to import material that could adversely impact (such as contamination) the geologic resources or existing soils.

Cumulative Impacts

The soils and geologic resources would be returned to a more natural and functional state. The mine sites would be back filled and re-contoured to the existing landscape. This would result in the elimination of scars on the landscape and allows natural processes to function again. There is a potential to import material that could adversely impact the geologic resources or existing soils. Reasonably foreseeable future actions at the Monument include creation of a trail management plan where some or all of the existing dirt roads would be targeted for removal and reclamation. The impacts to such geological and soil resources would be beneficial and the intensity would range from minor to moderate depending upon the scope of the potential actions and the location. The ground disturbance associated with this alternative has the potential to adversely contribute to the impacts of other past, present, and reasonably foreseeable future actions on geologic resources.

Conclusion

There could be moderate, long term adverse impacts to the geologic resources.

Visitor Use and Experience

There would be impacts to visitor use and experience, as three sizeable visual scars and two safety hazards would be eliminated. The elimination of the high walls and the re-contoured landscape would enhance the visitor experience by making their visit safer and their views of the landscape aesthetically pleasing and more consistent with the surrounding landforms. The impacts would be long-term, beneficial and of moderate intensity.

Cumulative Impacts

Visitors would be able to enjoy an aesthetically pleasing and safe visit to the volcanoes as the high walls would be eliminated as well as the scars on landscape returned to a more consistent appearance with the surrounding landscape. Reasonably foreseeable future actions at the Monument include creation of a trail management plan where some or all of the existing dirt roads would be targeted for removal and reclamation. The impacts to the visitor experience could be adverse and the intensity could range from minor to moderate depending upon the scope of the potential actions and the location. The actions associated with this alternative would beneficially contribute to the impacts of other past, present and reasonably foreseeable future actions on visitor use and experience.

Conclusion

The impacts to visitor use and experience are beneficial in nature and would be moderate. Cumulatively, impacts to visitor use and experience resulting from past development in conjunction with impacts associated with reasonably foreseeable future actions have the potential to be adverse, and could range in intensity from minor to moderate. Because the impacts would be beneficial in nature, any contribution to future impacts would be a beneficial impact.

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Petroglyph National Monument; (2) key to the natural or cultural integrity of the monument; or (3) identified as a goal in the monument's general management plan or other relevant National Park Service planning documents, there would be no impairment of the monument's resources or values.

Cultural Landscapes

The importation of fill material for backfilling, re-grading, and re-contouring the sites would enable the best chance of recapturing the fullest restoration of the historic and prehistoric cultural landscape from a visual standpoint. However, introduction of fill material foreign to the volcanoes area was deemed inappropriate by tribal consultants. The introduction of soils and materials from another location was interpreted as something that would detract from the spiritual significance of the site. The impact would be long-term, adverse and of moderate intensity.

Cumulative Impacts

The cumulative impacts would be identical for all three sites slated for reclamation activities. From a purely visual perspective, if soils and materials were brought into the site to accomplish the re-contouring and re-grading, the cumulative impacts would be similar to those identified under the Preferred Alternative. However, the introduction of foreign material would detract from the cultural significance of the area and might jeopardize its eligibility for listing as a National Register cultural landscape.

Conclusion

The adverse impact to the area would be long term and moderate when considering the cultural significance of the area.

CONSULTATION AND COORDINATION

AGENCIES and ORGANIZATIONS

Agencies and Organizations contacted for information; or that assisted in identifying important issues, developing alternatives, or analyzing impacts; or that would review and comment upon the environmental assessment include:

Federal Agencies

U.S. Department of the Interior - Fish and Wildlife Service

State Agencies

Office of Cultural Affairs, Historic Preservation Division (office of State Historic Preservation Officer)

Associated Native Americans Tribes and Tribal Entities

Jicarilla Apache Tribe	Sandia Pueblo	Taos Pueblo	Navajo Nation
Mescalero Apache Tribe	San Felipe Pueblo	Tesuque Pueblo	Navajo Nation Council
Acoma Pueblo	San Ildefonso Pueblo	Zia Pueblo	All Indian Pueblo Council
Cochiti Pueblo	San Juan Pueblo	Laguna Pueblo	Five Sandoval Indian Pueblo
Isleta Pueblo	Santa Ana Pueblo	Pojoaque Pueblo	Eight Northern Indian Pueblo
Jemez Pueblo	Santa Clara Pueblo	Picuris Pueblo	
Nambe Pueblo	Santo Domingo Pueblo	Zuni Pueblo	

PREPARERS

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Gretchen Ward, Cultural Resources Program Manager, National Park Service, Petroglyph National Monument, Albuquerque, NM

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Diane Souder, Chief, Division of Interpretation

National Park Service, Natural Resources Program Center, Geologic Resources Division, Denver, CO

Deanna Greco, Geologist/Reclamation Specialist, Science and Technical Services Branch
Dave Steensen, Geologist/Manager, Disturbed Lands Restoration Program, Science and Technical Services Branch

City of Albuquerque Open Space Division

Dr. Matthew Schmader, Assistant Superintendent, Open Space Division and Archeologist

LIST OF ENVIRONMENTAL ASSESSMENT RECIPIENTS

The following agencies, organizations, and groups were sent copies of the Environmental Assessment:

Federal Agencies

U.S. Department of the Interior - Fish and Wildlife Service

State Agencies

Office of Cultural Affairs, Historic Preservation Division (office of State Historic Preservation Officer)

New Mexico Department of Game and Fish

New Mexico Energy, Minerals and Natural Resources Department

City of Albuquerque

Open Space Division

Associated Native American Tribes and Tribal Entities

Jicarilla Apache Tribe	Sandia Pueblo	Taos Pueblo	Navajo Nation
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Isleta Pueblo	Santa Ana Pueblo	Pojoaque Pueblo	Eight Northern Indian Pueblo
Jemez Pueblo	Santa Clara Pueblo	Picuris Pueblo	
Nambe Pueblo	Santo Domingo Pueblo	Zuni Pueblo	

Other Agencies and Organizations

New Mexico Wilderness Alliance

New Mexico Museum of Natural History and Science

National Parks and Conservation Association

Friends of the Albuquerque Petroglyphs

Sierra Club

Santa Fe Village Neighborhood Association

Taylor Ranch Neighborhood Association

Westland Development Corporation (Representing Atrisco Land Grant Heirs)

BIBLIOGRAPHY

Rogers, James

- 1983 *The Volcano Park (Southern) Archaeological Project, Bernalillo County, New Mexico*. Report prepared by Scientific Archeological Services to the Parks and Recreation Department, City of Albuquerque. Rodgers

National Park Service (U.S. Department of the Interior)

- 1993 *Petroglyph National Monument Rapid Ethnographic Assessment*. Copy available at Petroglyph National Monument.
- 1994 *Cultural Landscape Overview, Petroglyph National Monument, New Mexico*. Copy available at Petroglyph National Monument.
- 1995 *Reclamation Alternatives for Three Cinder Quarries, Petroglyph National Monument, Bernalillo County, New Mexico*. Copy available at Petroglyph National Monument.
- 1996 General Management Plan/Final Environmental Impact Statement/Development Concept Plan, Petroglyph National Monument. Copy available at Petroglyph National Monument
- 1997 Director's Order #28: *Cultural Resource Management Guideline*. Copy available at Petroglyph National Monument.
- 1999a *Results of the 1992 -- 1994 Archeological Resource Inventory*. Copy available at Petroglyph National Monument.
- 1999b *Petroglyph National Monument Resource Management Plan*. Copy available at Petroglyph National Monument.
- 2000a Director's Order #47, *Sound Preservation and Noise Management*. Copy available at Petroglyph National Monument.
- 2000b *Management Policies, 2001*. Copy available at Petroglyph National Monument.
- 2001 Director's Order #12: *Conservation Planning, Environmental Impact Analysis, and Decision-Making*. Copy available at Petroglyph National Monument.

Appendix 1

Press Release

09/12/2001



National Park Service
U.S. Department of the Interior

Petroglyph
National Monument

6001 Unser Blvd. N.W.
Albuquerque, New Mexico
87120

505-899-0205 phone
505-899-0207 fax

Petroglyph National Monument News Release

For Immediate Release

National Park Service Seeking Comments for Reclamation Project at Volcanoes

The National Park Service is seeking public comments to prepare an environmental assessment for the reclamation of three cinder mines in the vicinity of the Volcanoes within Petroglyph National Monument. In 1995 the National Park Service analyzed the three cinder mines and produced alternatives for the reclamation. This document is available for public review and comment from the Superintendent at the address below.

The three cinder mines were created prior to the establishment of Petroglyph National Monument for commercial purposes. The mines pose health hazards to hikers and disrupts the viewshed of the West Mesa. The goal of the reclamation is to restore a natural appearance to the area and address safety issues, while minimizing any disturbance.

Comments received will be used in developing the environmental assessment and should be sent by October 12, 2001.

Please send your comments or requests to: Superintendent Judith Cordova, Petroglyph National Monument, 6001 Unser Blvd. NW, Albuquerque, NM 87120. For additional information please call (505) 899-0205, ext. 221.

XXX

EXPERIENCE YOUR AMERICA

The National Park Service cares for special places saved by the American people so that all may experience our heritage.

Appendix 2

Letter Sent to American Indian Tribes During Public Scoping

10/01/2001



United States Department of the Interior
NATIONAL PARK SERVICE
INTERMOUNTAIN REGION
Petroglyph National Monument
6001 Unser Blvd., NW
Albuquerque, New Mexico 87120

In reply refer to:
L76/H42/A3823(PETR)

October 1, 2001

Dear:

The National Park Service is seeking public comments to prepare an environmental assessment for the reclamation of three cinder mines in the vicinity of the Volcanoes on the West Mesa in Petroglyph National Monument. In 1995, the National Park Service analyzed the three cinder mines and produced alternatives for the reclamation. This document is enclosed for your review and comment.

Former mining operations have left a scarred landscape with potential safety hazards. The disturbed area totals approximately 9.9 acres. The mines are visually intrusive and are in an area used regularly by the visiting public. At one location there is a 60-foot highwall (a series of steep faces), and at another there is a 15-foot highwall. These are the areas representing the greatest safety concern, while the overall area is made up of unweathered volcanic material that is unnatural and unsightly in its current state.

With the proposed reclamation project we hope to restore natural contours to the landscape and eliminate a safety hazard for the visiting public. In a recent consultation meeting with one of the Pueblos, it was suggested that the existing stockpiles of cinders be used for any possible reclamation and contouring. The National Park Service is supportive of this idea which is explored in the enclosed alternatives.

I look forward to your comments. If you wish to make a site visit we would be happy to show you the proposed project area. As we conduct the public scoping process and begin writing a formal environmental assessment we will seek additional comments. If you have any questions please contact our Cultural Resource Specialist Gretchen Ward at 505-899-0205, ext. 343.

Sincerely,

(Sgd.) Judith Cordova

Judith Córdoba
Superintendent

Enclosure

bcc.

✓ PETR Reading file
Cultural Resource Specialist, PETR

GWard:aam:09/28/01:PETR:VOLCANOLTR.DOC

A similar letter was sent out to the following list of people.

Appendix 3

Letter Sent to SHPO

12/20/2001



United States Department of the Interior

NATIONAL PARK SERVICE

INTERMOUNTAIN REGION

Petroglyph National Monument

6001 Unser Blvd., NW

Albuquerque, New Mexico 87120

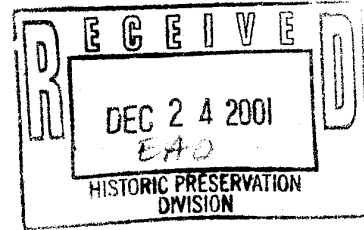
REC'D FEB 01 2002

In reply refer to:
H42(PETR)

December 20, 2001

Ms. Elizabeth Oster
State Historic Preservation Office
Historic Preservation Division
Office of Cultural Affairs
228 E. Palace Avenue
Santa Fe, New Mexico 87503

063911



Dear Ms. Oster:

In accordance with Section 106 of the National Historic Preservation Act of 1966, amended, and the Council's regulations, 36 CFR Part 800, we seek your review and comment regarding a proposed undertaking to reclaim three cinder mines in the vicinity of the Volcanoes on the West Mesa in Petroglyph National Monument. In 1995, the National Park Service analyzed the three cinder mines and produced alternatives for the reclamation. This document and an Assessment of Actions Having an Effect on Cultural Resources are enclosed for your review and comment.

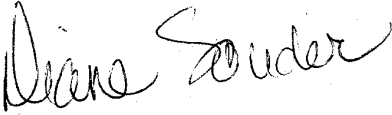
Former mining operations have left a scarred landscape with potential safety hazards. The disturbed area totals approximately 9.9 acres. The mines are visually intrusive and are in an area used regularly by the visiting public. At one location there is a 60-foot highwall (a series of steep faces), and at another there is a 15-foot highwall. These are the areas representing the greatest safety concern, while the overall area is made up of unweathered volcanic material that is unnatural and unsightly in its current state.

With the proposed reclamation project we hope to restore natural contours to the landscape, eliminate a safety hazard for the visiting public, and restore the historic landscape. In a recent consultation meeting with one of the Pueblos, it was suggested that the existing stockpiles of cinders be used for any possible reclamation and contouring. The National Park Service is supportive of this idea which is explored in the enclosed alternatives.

The project area was intensively surveyed in James Rodgers in 1983, and again by Monument staff in 1998, 2000, and again this year, all with negative results. The National Park Service has determined that this project will have No Adverse Effect on the cultural qualities that may qualify the Volcanoes Area of Petroglyph National Monument for listing on the National Register of Historic Places as a cultural landscape.

I look forward to your comments. We hope that you can concur with this determination and for your convenience have provided, "I Concur" and "Date" blocks below. If you wish to make a site visit we would be happy to show you the proposed project area. If you have any questions please contact our Cultural Resource Specialist Gretchen Ward at 505-899-0205, ext. 343.

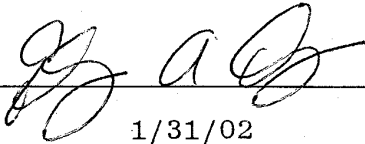
Sincerely,



for
Judith Córdova
Superintendent

Enclosures

I Concur



For New Mexico SHPO

Date

1/31/02

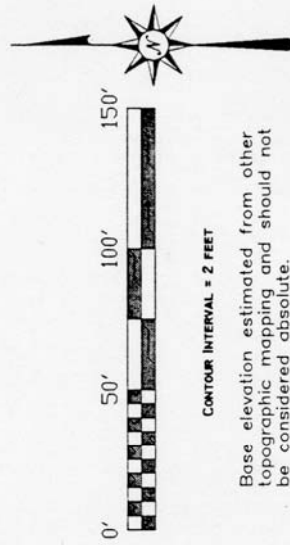
Appendix 4

Technical Drawings from Alternatives for Reclamation of Three Abandoned Cinder Quarries, Petroglyph National Monument, Albuquerque, Bernalillo County, New Mexico

March 1995

Cinder Quarry, Site-1, Vulcan
Petroglyph National Monument
Bernalillo County, New Mexico

EXISTING TOPOGRAPHY



U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
MINING AND MINERALS BRANCH

D:\steensen\d\projects\petr\pan-min.dwg



Figure 5. Map Showing Existing Topography for Site # 1

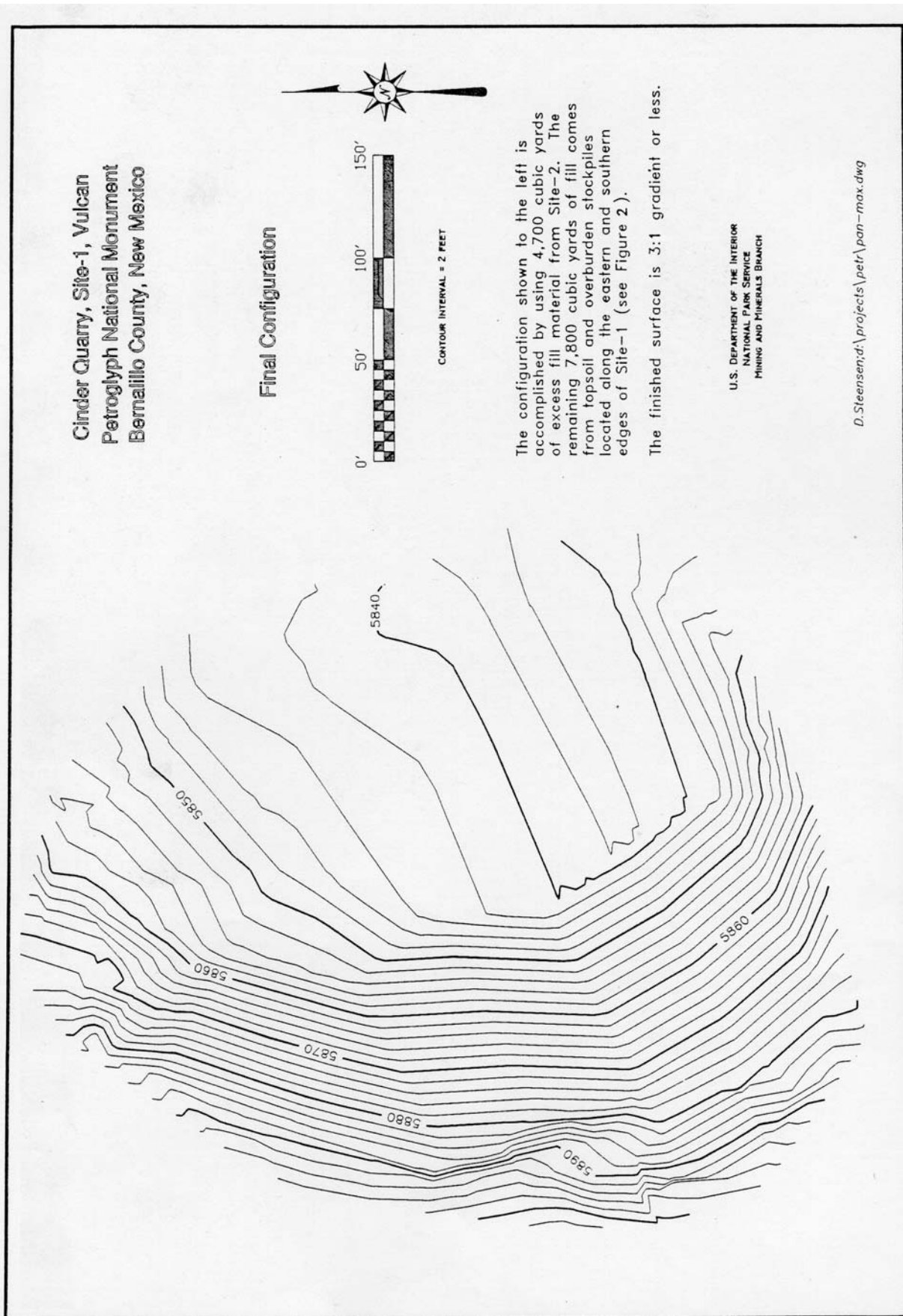


Figure 6. Map Showing Final Topography for Site # 1

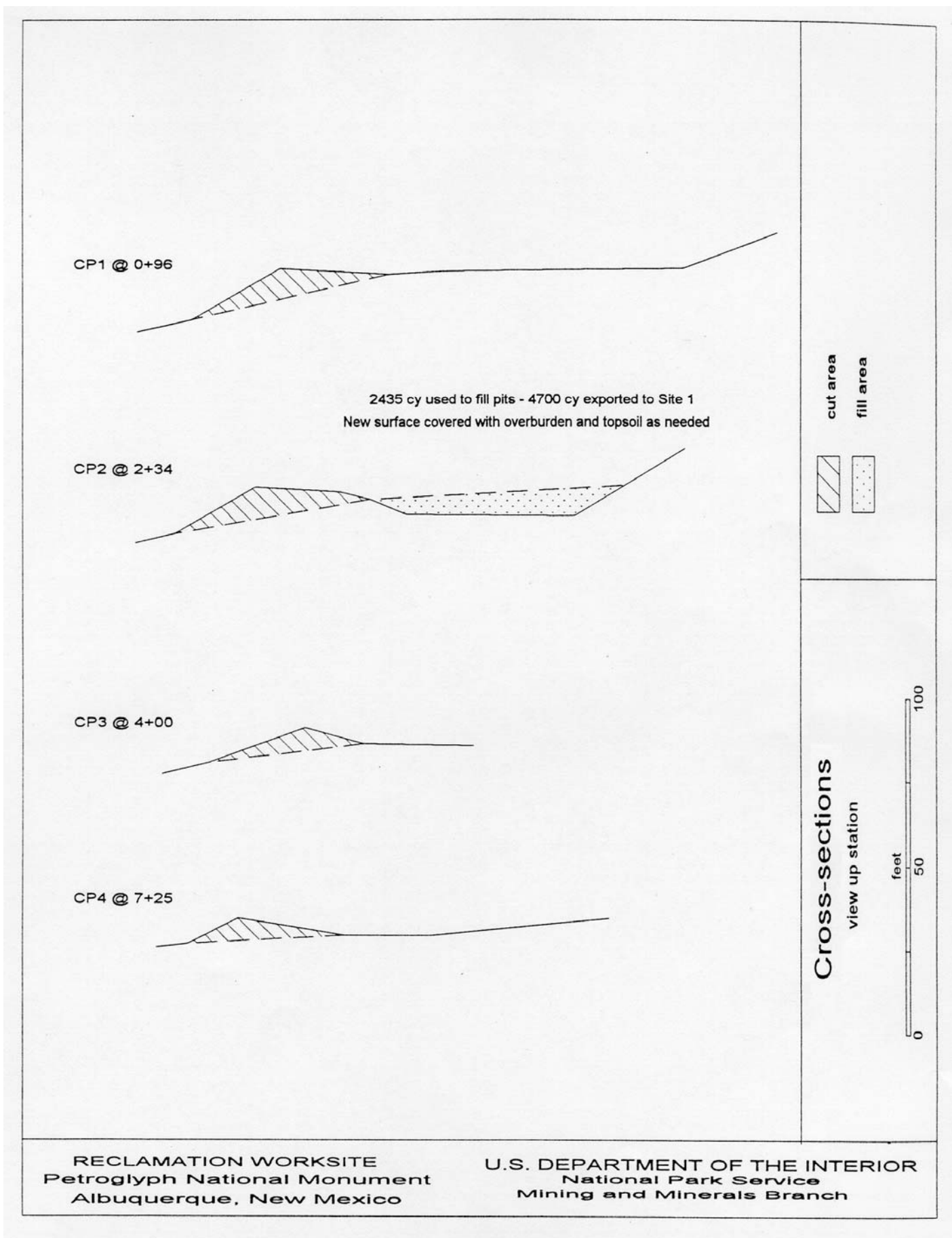


Figure 7. Existing Contour Lines and Final Contour Lines for Site # 2

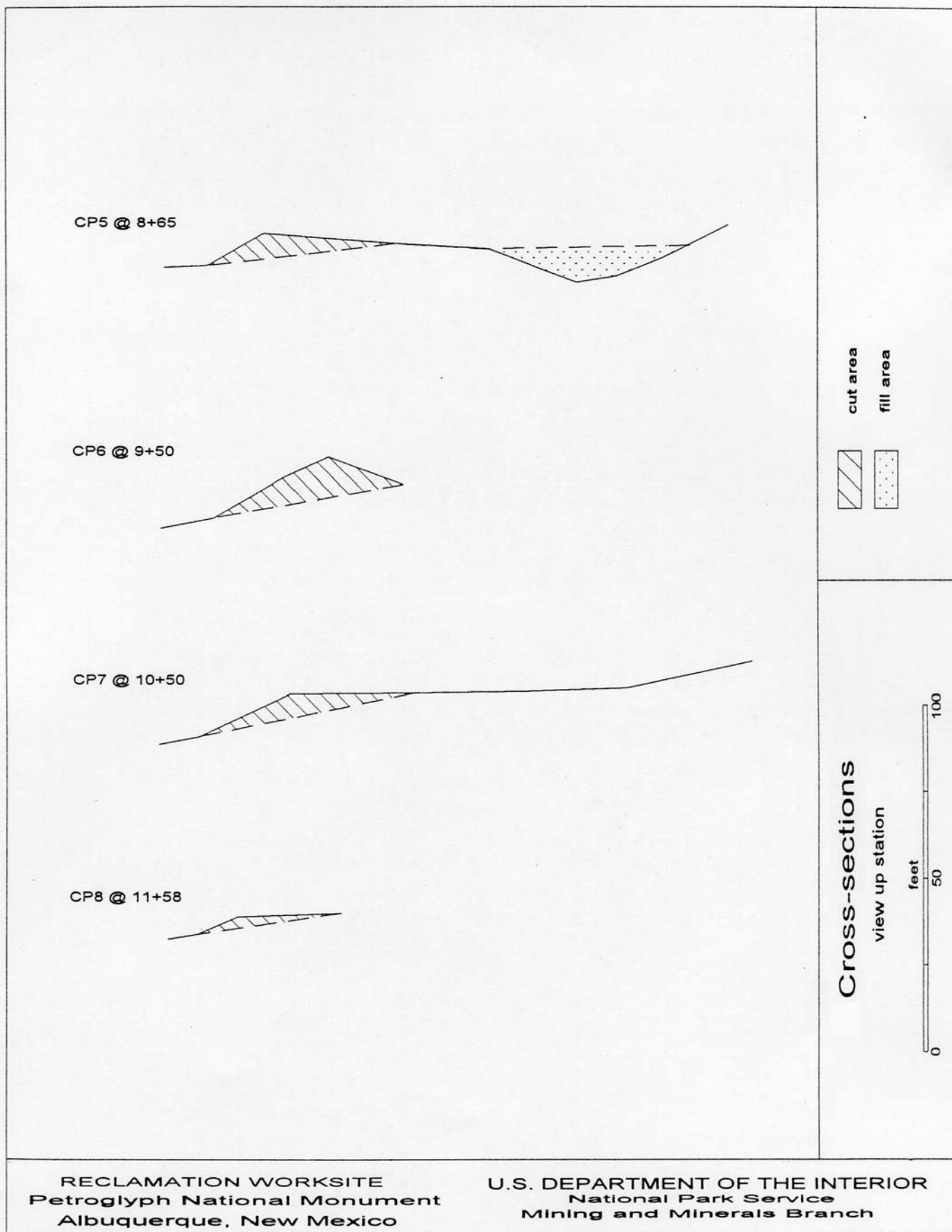


Figure 8. Existing Contour Lines and Final Contour Lines for Site # 2

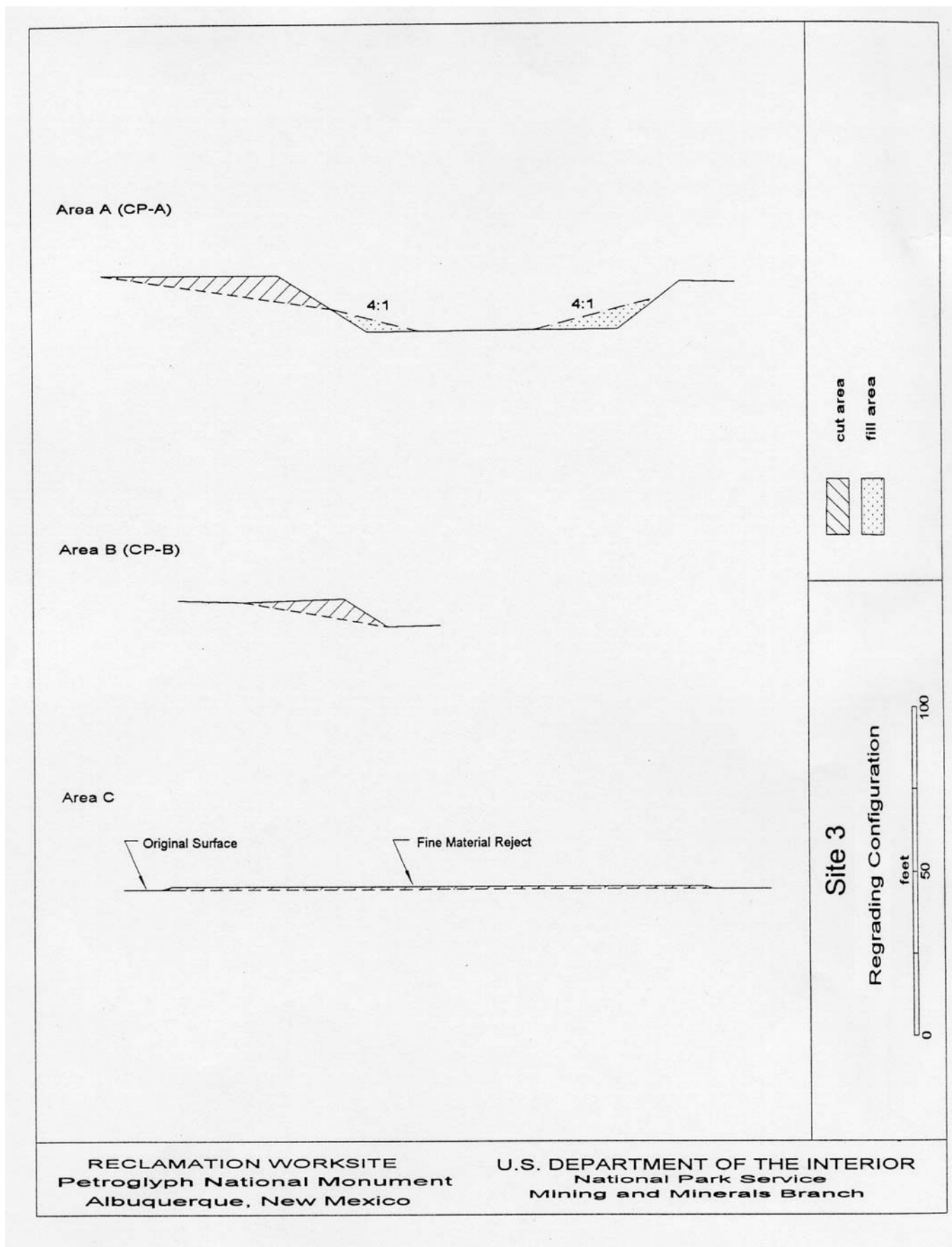


Figure 9. Existing Contour Lines and Final Contour Lines for Site # 3